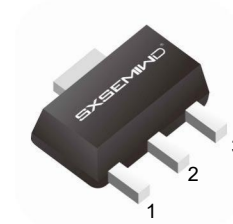


## FEATURES

- Large collector power dissipation  $P_C$
- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- Complementary to 2SB766A

## SOT-89-3L



1. BASE
2. COLLECTOR
3. EMITTER

**MARKING**:YQ;YR;YS

## MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted)

| Symbol         | Parameter                                        | Value   | Unit             |
|----------------|--------------------------------------------------|---------|------------------|
| $V_{CBO}$      | Collector-Base Voltage                           | 60      | V                |
| $V_{CEO}$      | Collector-Emitter Voltage                        | 50      | V                |
| $V_{EBO}$      | Emitter-Base Voltage                             | 5       | V                |
| $I_C$          | Collector Current -Continuous                    | 1       | A                |
| $P_C$          | Collector Power Dissipation                      | 0.5     | W                |
| $T_J, T_{stg}$ | Operation Junction and Storage Temperature Range | -55~150 | $^\circ\text{C}$ |

## ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless otherwise specified)

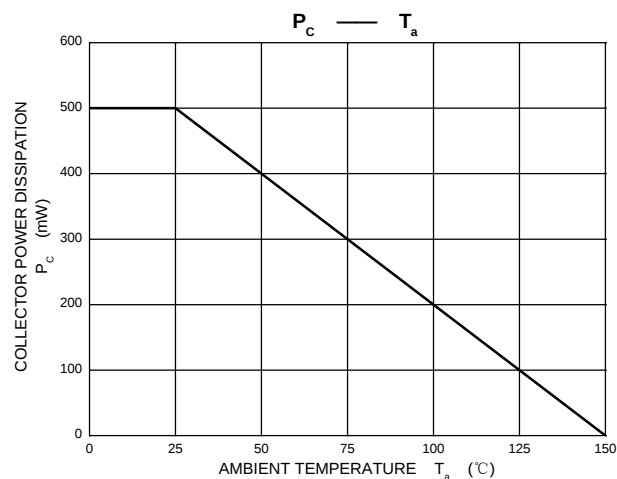
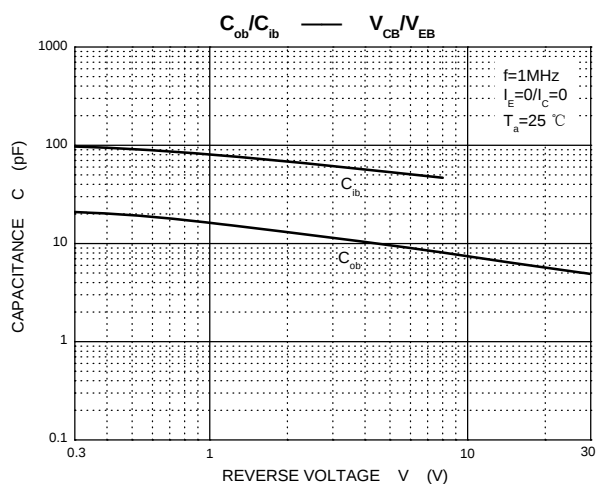
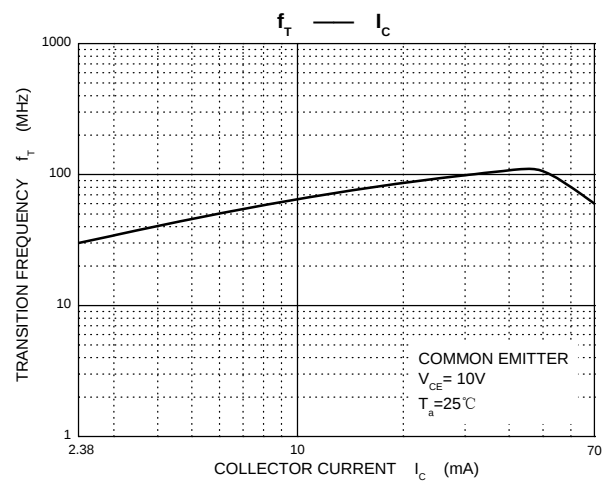
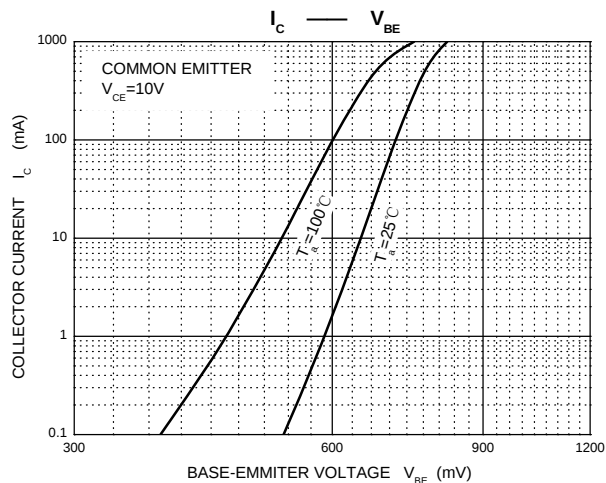
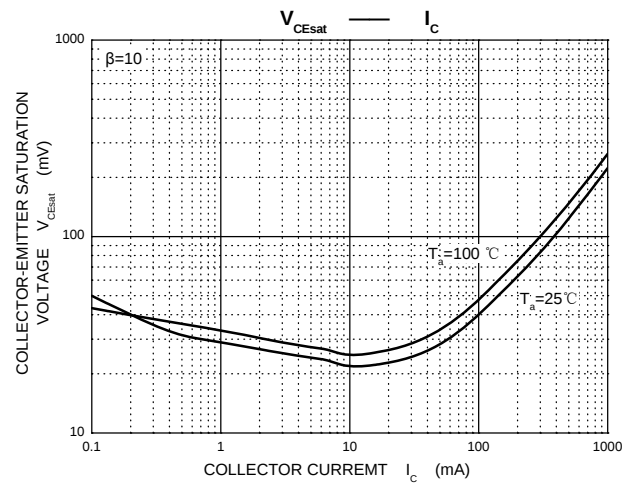
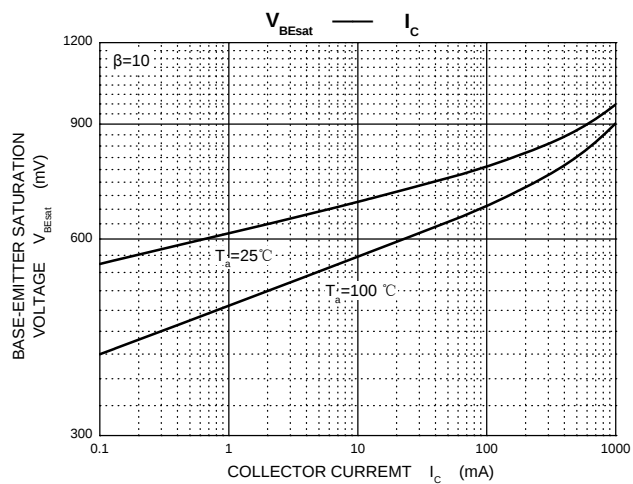
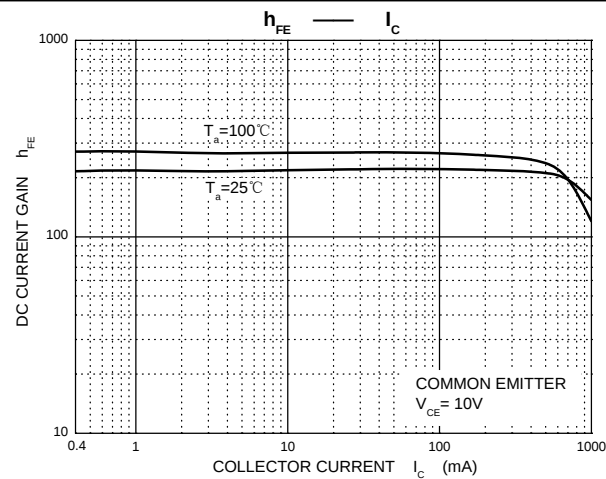
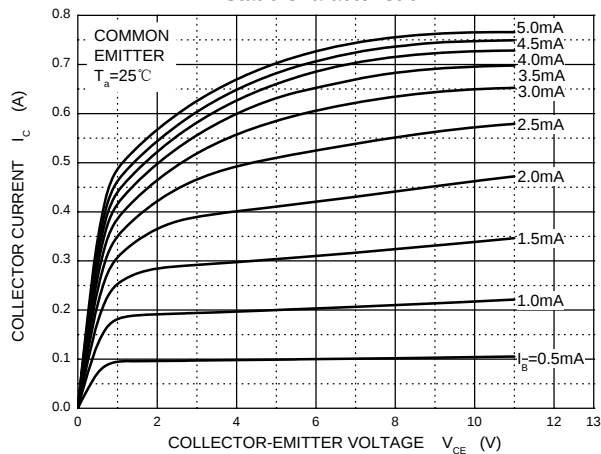
| Parameter                            | Symbol        | Test conditions                                       | Min | Typ | Max | Unit          |
|--------------------------------------|---------------|-------------------------------------------------------|-----|-----|-----|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=10\mu\text{A}, I_E=0$                            | 60  |     |     | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=2\text{mA}, I_B=0$                               | 50  |     |     | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=10\mu\text{A}, I_C=0$                            | 5   |     |     | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=20\text{V}, I_E=0$                            |     |     | 0.1 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=4\text{V}, I_C=0$                             |     |     | 0.1 | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE}=10\text{V}, I_C=500\text{mA}$                 | 85  |     | 340 |               |
|                                      | $h_{FE(2)}$   | $V_{CE}=5\text{V}, I_C=1\text{A}$                     | 50  |     |     |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$                   |     |     | 0.4 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$                   |     |     | 1.2 | V             |
| Transition frequency                 | $f_T$         | $V_{CE}=10\text{V}, I_C=50\text{mA}, f=200\text{MHz}$ |     | 200 |     | MHz           |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$             |     | 20  |     | pF            |

## CLASSIFICATION OF $h_{FE(1)}$

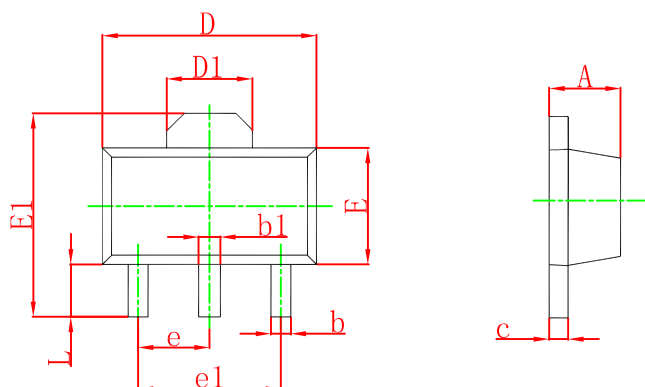
| Rank    | Q      | R       | S       |
|---------|--------|---------|---------|
| Range   | 85-170 | 120-240 | 170-340 |
| Marking | YQ     | YR      | YS      |

## Typical Characteristics

Static Characteristic

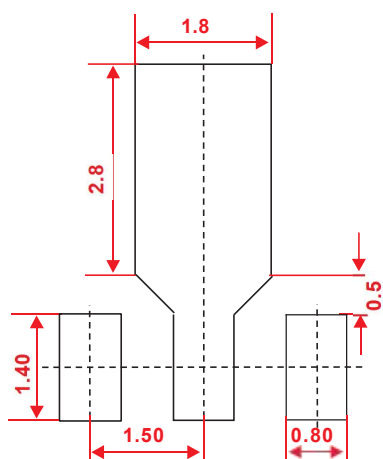


## SOT-89-3L Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.400                     | 1.600 | 0.055                | 0.063 |
| b      | 0.320                     | 0.520 | 0.013                | 0.020 |
| b1     | 0.400                     | 0.580 | 0.016                | 0.023 |
| c      | 0.350                     | 0.440 | 0.014                | 0.017 |
| D      | 4.400                     | 4.600 | 0.173                | 0.181 |
| D1     | 1.550 REF.                |       | 0.061 REF.           |       |
| E      | 2.300                     | 2.600 | 0.091                | 0.102 |
| E1     | 3.940                     | 4.250 | 0.155                | 0.167 |
| e      | 1.500 TYP.                |       | 0.060 TYP.           |       |
| e1     | 3.000 TYP.                |       | 0.118 TYP.           |       |
| L      | 0.900                     | 1.200 | 0.035                | 0.047 |

## SOT-89-3L Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.